

CLAIMS:

1. An isolated nucleic acid comprising a nucleic acid sequence selected from the group consisting of:
 - (a) a nucleic acid encoding any of ramoplanin ORFs 1 to 33 (SEQ ID NOS: 2 to 34);
 - (b) a nucleic acid encoding a polypeptide encoded by any of ramoplanin ORFs 1 to 33 (SEQ ID NOS: 2 to 34);
 - (c) a nucleic acid amplified by polymerase chain reaction (PCR) using primer pairs that amplify any of ramoplanin ORFs 1 to 33 (SEQ ID NOS: 2 to 34).

2. An isolated nucleic acid comprising a nucleic acid sequence selected from the group consisting of:
 - (a) a nucleic acid encoding any of ramoplanin ORFs 4, 5, 9 to 19, 22 to 26, 29, 30 and 31 (SEQ ID NOS: 5, 6, 10 to 20, 23 to 27, 30, 31 and 32);
 - (b) a nucleic acid encoding a polypeptide encoded by any of ramoplanin ORFs 4, 5, 9 to 19, 22 to 26, 29, 30 and 31 (SEQ ID NOS: 5, 6, 10 to 20, 23 to 27, 30, 31 and 32);
 - (c) a nucleic acid encoding a polypeptide that is at least 75% identical in amino acid sequence to a polypeptide of ramoplanin ORFs 4, 5, 9 to 19, 22 to 26, 29, 30 and 31 (SEQ ID NOS: 5, 6, 10 to 20, 23 to 27, 30, 31 and 32).

3. The isolated nucleic acid of claim 1, wherein said nucleic acid encodes at least two ORFs selected from the group consisting of ORF 4 to 32 (SEQ ID NOS: 2 to 33).

4. The isolated nucleic acid of claim 3 wherein said nucleic acid encodes at least three ORFs selected from the group consisting of ORF 1 to 32 (SEQ ID NOS: 2 to 33).

5. An isolated nucleic acid comprising a nucleic acid that hybridizes under stringent conditions to any one of ORFs 1 to 32 of the ramoplanin biosynthesis gene cluster (SEQ ID NOS: 2 to 33) and can substitute for the ORF to which it specifically hybridizes to direct the synthesis of a ramoplanin.

6. An isolated nucleic acid comprising a nucleic acid that hybridizes under stringent conditions to any one of ORFs 4, 5, 9 to 19, 22 to 26, 29, 30 and 31 (SEQ ID NOS: 5, 6, 10 to 20, 23 to 27, 30, 31 and 32) of the ramoplanin biosynthesis gene cluster and can substitute for the ORF to which it specifically hybridizes to direct the synthesis of a ramoplanin.
7. The isolated nucleic acid of claim 5, wherein the isolated nucleic acid specifically hybridizes under stringent conditions to a nucleic acid encoding a polypeptide selected from the group comprising of ORF 1, ORF 2, ORF 3, ORF 4, ORF 5, ORF 6, ORF 7, ORF 8, ORF 9, ORF 10, ORF 11, ORF 12, ORF 13, ORF 14, and ORF 15 (SEQ ID NOS: 2 to 16).
8. The isolated nucleic acid of claim 5 wherein the nucleic acid specifically hybridizes under stringent conditions to a nucleic acid encoding a polypeptide selected from the group consisting of ORF 16, ORF 17, ORF 18, ORF 19, ORF 20, ORF 21, ORF 22, ORF 23, ORF 24, ORF 25, ORF 26, ORF 27, ORF 28, ORF 29, ORF 30 and ORF 31 (SEQ ID NOS 17 to 32).
9. The isolated nucleic acid of claim 5 wherein the isolated nucleic acid encodes a polypeptide selected from the group consisting of ORF 1, ORF 2, ORF 3, ORF 4, ORF 5, ORF 6, ORF 7, ORF 8, ORF 9, ORF 10, ORF 11, ORF 12, ORF 13, ORF 14, ORF 15, (SEQ ID NOS: 2 to 16).
10. The isolated nucleic acid of claim 5 wherein the isolated nucleic acid encodes a polypeptide selected from the group consisting of ORF 16, ORF 17, ORF 18, ORF 19, ORF 20, ORF 21, ORF 22, ORF 23, ORF 24, ORF 25, ORF 26, ORF 27, ORF 28, ORF 29, ORF 30 and ORF 31 (SEQ ID NOS: 17 to 32).
11. An isolated gene cluster comprising ORFs encoding polypeptides sufficient to direct the synthesis of a ramoplanin or a ramoplanin analog.
12. The isolated gene cluster of claim 12 wherein the gene cluster is present in a bacterium.

13. The isolated gene cluster of claim 12 wherein the gene cluster is the gene cluster present in *E. coli* strains DH10B having accession nos. IDAC 190901-1, 190901-2 and 190901-3.
14. An isolated polypeptide comprising a polypeptide sequence selected from any one of:
- (a) a polypeptide of any one of ORFs 1 to 32 (SEQ ID NOS: 2 to 33); and
 - (b) a polypeptide which is at least 75% identical in amino acid sequence to a polypeptide of any one of ORFs 1 to 32 (SEQ ID NOS: 2 to 33).
15. The isolated polypeptide of claim 14 wherein the polypeptide sequence selected from any one of:
- a) a polypeptide of any one of ORFs 4, 5, 9 to 19, 22 to 26, 29, 30 and 31 (SEQ ID NOS: 5, 6, 10 to 20, 23 to 27, 30, 31 and 32); and
 - b) a polypeptide which is at least 75% identical in amino acid sequence to any one of ORFs 4, 5, 9 to 19, 22 to 26, 29, 30 and 31 (SEQ ID NOS: 5, 6, 10 to 20, 23 to 27, 30, 31 and 32).
16. A polypeptide of claim 14, wherein the polypeptide contains at least two ORFs selected from ORFs 1 to 32 (SEQ ID NOS: 2 to 33).
17. The polypeptide of claim 14, wherein said polypeptide is a polypeptide containing at least three ORFs selected from ORFs 1 to 32 (SEQ ID NOS: 2 to 33).
18. The polypeptide of claim 14, wherein said polypeptide is a polypeptide containing at least five or more ORFs selected from ORFs 1 to 32 (SEQ ID NOS: 2 to 33).
19. An expression vector comprising a nucleic acid of claim 1.
20. A host cell transformed with an expression vector of claim 19.

21. The host cell of claim 20, wherein the cell is transformed with an exogenous nucleic acid comprising a gene cluster encoding polypeptides sufficient to direct the assembly of a ramoplanin or a ramoplanin analog.
22. A method of chemically modifying a biological molecule that is a substrate for a polypeptide encoded by a ramoplanin biosynthesis gene cluster, said method comprising contacting the biological molecule with a polypeptide of claim 14, whereby said polypeptide chemically modifies said biological molecule.
23. The method of claim 22 wherein said method comprises contacting said biological molecule with at least two different polypeptides encoded by ramoplanin ORFs 1 to 31 (SEQ ID NOS: 2 to 32).
24. The method of claim 23 wherein said method comprises contacting said biological molecule with at least two different polypeptides encoded by ORFs 4, 5, 9 to 19, 22 to 26, 29, 30 and 31 (SEQ ID NOS: 5, 6, 10 to 20, 23 to 27, 30, 31 and 32).